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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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MARGER JOHNSON & MCCOLLOM, P.C.
210 SW MORRISON STREET, SUITE 400
PORTLAND, OR 97204

EXAMINER

LE, BRIAN Q

ART UNIT	PAPER NUMBER
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2624

DATE MAILED: 10/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/929,282

Applicant(s)

WREDENHAGEN ET AL.

Examiner

Brian Q. Le

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09/21/2006 has been entered.

Response to Amendment and Arguments

2. Applicant's amendment filed September 21, 2006, has been entered and made of record.
3. The rejection of claims 31 and 34 under 35 U.S.C. 112 is withdrawn.
4. Applicant's arguments with regard to claims 7-34 have been fully considered, but are not considered persuasive because of the following reasons:

Regarding the argument (page 7 of the Remarks), the Applicant continues to argue that Takahashi does not disclose edge templates are populated. The Examiner respectfully disagrees. First, the Applicant did not claim "edge templates population" in the claiming languages. Secondly, Takahashi teaches a concept of edge template population (FIG. 1, element 22; and column 11, lines 58-61).

For claims 29 and 32, the Applicant argues (bottom of page 8 to page 9 of the Remarks) that Takahashi does not teach a plurality of pairs of number, a first number in the pair defining a start position and second number of pair defining an intensity of each of the image features. The Examiner respectfully disagrees. At column 19 and 20 of the reference, Takahashi teaches a concept of vector set comprises pair of points a_i , c_i , where a is reference to the intensity values

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of color of image and c is reference to coordinate value (start position) (column 19, line 25 to column 20, line 35).

Thus, the rejections of all of the claims are maintained.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 7-34 are rejected under 35 U.S.C. 102(e) as being anticipated by Takahashi U.S. Patent No. 6,665,439.

Regarding claim 7, Takahashi teaches an interpolator (column 18, lines 55-60), comprising:

A feature extractor (extracting outlines of objects/edge) (column 4, lines 45-50) to populate a feature table (populate/generate arrays of numeric values for edge vector) (column 5, lines 33-44) by identifying image features in a pixel array (the process of determining object's edge in a pixel's array) (column 5, lines 35-44);

A feature comparator to populate a match table by matching features in the feature table (comparing edge in the modulus edge vector) (column 5, lines 5-30).

For claim 8, Takahashi also teaches the interpolator where the image features are edges (abstract).

Referring to claim 9, Takahashi discloses the interpolator where the feature extractor is adapted to be programmable (extracted features are stored) (column 11, lines 35-45).

Regarding claim 10, Takahashi also discloses the interpolator where the image features is adapted to dynamically change according to user preference (column 20, lines 54-58).

For claim 11, Takahashi shows the interpolator where the feature extractor includes a state machine for each image feature (FIG. 1, elements 21-24).

As to claim 12, Takahashi also shows the interpolator where the feature comparator is adapted to match image features in adjacent rows of the pixel array (FIG. 2).

Also to claim 13, Takahashi further shows the interpolator where the feature comparator is adapted to match image features in adjacent columns of the pixel array (FIG. 2).

For claim 14, Takahashi teaches the interpolator comprising an alignment controller to align matched image features in the match table (successively designate pixels of the object pixel and successively obtain edge vectors correspond to object pixel) (FIG. 5, element 11).

Regarding claim 15, Takahashi shows the interpolator where the alignment controller is adapted to compute relative shifts between adjacent rows or columns (column 13, lines 20-37).

Referring to claim 16, Takahashi teaches the interpolator where the alignment controller is adapted to identify a transition segment (the changes between edge strength from weak to strong) (FIG. 9A).

Also to claim to 17, Takahashi also teaches the interpolator where the alignment controller is adapted to identify a pivot pixel (centered/strong pixel) (FIG. 9A).

For claim 18, Takahashi teaches a method for interpolating a target pixel in an array of source pixels comprising:

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Populating a feature table by identifying image features in the source pixels (populate/generate arrays of numeric values for edge vector) (column 5, lines 33-44);

Populating a match table by matching features (matching moduli of edge vector) in the feature table (edge vector) (column 16, lines 55-67 and column 16, lines 1-10);

Generating a target pixel responsive to the matching (derive/object pixel) (abstract and column 16, lines 55-67).

For claims 19-28, please refer back to claims 8-17 respectively for the teachings and explanations.

Regarding claim 29, Takahashi teaches the interpolator where the feature table includes a plurality of pairs of numbers, a first number in the pair defining a start position and second number in the pair defining an intensity for each of the image features identified (a concept of vector set comprises pair of points a_i , c_i , where a is reference to the intensity values of color of image and c is reference to coordinate value/start position) (column 19, line 25 to column 20, line 35).

Referring to claim 30, Takahashi teaches the interpolator where the feature comparator is adapted to match like features in adjacent rows or columns of the feature table (matching in surrounding adjacent pixels or regions) (abstract and FIG. 37, element 72).

For claim 31, Takahashi teaches the interpolator where, after a first row of pixel data (adjacent pixels generate a row of pixel) (FIG. 11, element 1002), the feature comparator is adapted to populated the match table at about the same time as the feature extractor populates the feature table (the continuing processing of updating edge vector while the moduli of the edge vector is matching) (FIG. 11 and column 16, lines 35-67).

Regarding claims 32-34, please refer back to claims 29-31 for further teachings and explanations.

Contact Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Q. Le whose telephone number is 571-272-7424. The examiner can normally be reached on 8:30 A.M - 5:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on 571-272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Brian Le
October 5, 2006